

such as snuff or ammonia ; yet the sense of smelling continued unimpaired. The left side of the tongue was quite insensible to impressions both of touch and of taste. On examining the brain after death, a scirrhus tumour was found lying on the inner surface of the sphenoid bone, extending laterally to the foramen auditorium internum, and resting posteriorly on the pons Varolii, which was slightly ulcerated. The tumour had completely obliterated the foramina for the exit of the three branches of the fifth pair of nerves. This case proves, therefore, that, contrary to the opinion of Magendie, the senses of smell and vision can be exercised independently of the fifth pair of nerves ; and that the sense of taste is altogether derived from that nerve ; and corroborates the views of Sir Charles Bell on this part of physiology.

2. "On the Respiratory Organs of the Common Leech (*Hirudo officinalis*, Linn.), and their Connexions with the Circulatory System." By George Newport, Esq. Communicated by P. M. Roget, M.D., Sec. R.S.

The stomach of the leech has been hitherto described as a large elongated sac, simply divided into ten compartments by perforated membranous partitions : but the author, by a more accurate examination, finds that each portion of that organ is expanded into two lateral cæca, which increase both in size and in length as they are traced along the canal towards the pylorus. The cæca belonging to the tenth cavity are the longest, extending as far as the anus, and have themselves four constrictions : the cavity itself terminates in a funnel-shaped pylorus. When the posterior end of the animal is cut off, the cæcal portions of the stomach are laid open, and the blood which it receives flows out freely, as fast as it is swallowed ; and hence the leech, under these circumstances, continues to suck for an indefinite time.

The respiratory organs consist of two series of pulmonary sacs, arranged along the under side of the body, on each side of the nervous cords and ganglia. They each open upon the surface of the body by a very minute but distinctly valvular orifice. The membrane which lines them appears to be continuous with the cuticle, and is exceedingly delicate and highly vascular, receiving the blood, for the purpose of its being aerated, from the veins of the system. The blood is returned from these sacs into the lateral serpentine vessels by vessels of a peculiar construction, passing transversely, and forming loops, which are situated between the cæca of the stomach, and which are studded by an immense number of small rounded bodies closely congregated together, and bearing a great resemblance to the structure of the venæ cavæ of the cephalopodous Mollusca. The purpose answered by this structure is involved in much obscurity : the author offers a conjecture that they may be analogous in their office to the mesenteric glands of the higher animals.

With a view to determine some circumstances relating to the mode of the respiration of the leech, the author made some experiments, by confining the animal in water deprived of air by boiling. After some

time the leech was observed to give out bubbles of air ; and the water of the vessel, when tested by lime-water, indicated the presence of carbonic acid.—The paper is accompanied by drawings of the structures described.

3. “On the Comparative Osteological Forms in the Adult European Male and Female of the Human Species.” By Walter Adam, M.D., Fellow of the College of Physicians of Edinburgh.

With a view to the future investigation of the osteological development of the human race, the author gives, in the present paper, the results of a great number of measurements, which he has very carefully made, of the dimensions of the different bones composing the adult human skeleton. The male bones examined were those in the collection of Dr. Monro ; the female bones were furnished by Dr. Hamilton. The author was anxious to fix on some one dimension in the skeleton which might be taken as the standard of all the measurements : and finding that no bone of the trunk or limbs possessed the requisite characters for that purpose, he sought for it in the cranium ; and the result of an extensive series of observations led him to adopt as the standard of measure the distance between the prolongations of the zygomatic ridges, immediately over the meatus auditorius externus, as being that dimension which was less liable to variation than any other of the human cranium. This line he denominates the *auricular transverse* ; and, adopting a scale of which the unit is the 14th part of this line, being generally about the third of an inch, he states at length, in multiples of this unit, the dimensions, in different directions, of almost every bone in the skeleton ; noting more especially the differences that occur in those of the two sexes. Of these measurements, which are given in much detail, and in many instances arranged in a tabular form, it is impossible to give any abridgement. The conclusion he deduces from his inquiry is, that every bone in the body exhibits certain modifications, according to the sex of the individual.

4. “Some Experiments and Observations on the Combinations of Carbonic Acid and Ammonia.” By John Davy, M.D., F.R.S.

The author was led to the investigations of which he gives an account in the present paper, by finding in the note-books of his brother, the late Sir H. Davy, some memoranda of experiments which he had made on the salts of ammonia, and more especially on the carbonates. The first part of the paper relates to the direct combination of carbonic acid and ammonia, by which a salt is formed possessing singularly alkaline properties. The second is on the sesquicarbonate of ammonia ; a term which Mr. Richard Phillips has applied to that salt of ammonia which is commonly called the subcarbonate, and which is obtained by the mutual decomposition of carbonate of lime and sal-ammoniac, by means of heat. This the author concludes, from his experiments, to be composed of one proportion ammonia, one and a half of carbonic acid, and one of water. He then enters into a comparative review of the analyses of this salt by other chemists, and